ISSN 1518-3548

BANCO CENTRAL DO BRASIL

Working Paper Series 159

Behavior and Effects of Equity Foreign Investors on Emerging Markets

Barbara Alemanni and José Renato Haas Ornelas

February, 2008

ISSN 1518-3548
CGC 00.038.166/0001-05

Working Paper Series	Brasília	n. 159	Feb	2008	p. 1-41

Working Paper Series

Edited by Research Department (Depep) – E-mail: workingpaper@bcb.gov.br

Editor: Benjamin Miranda Tabak – E-mail: benjamin.tabak@bcb.gov.br
Editorial Assistent: Jane Sofia Moita – E-mail: jane.sofia@bcb.gov.br
Head of Research Department: Carlos Hamilton Vasconcelos Araújo – E-mail: carlos.araujo@bcb.gov.br

The Banco Central do Brasil Working Papers are all evaluated in double blind referee process.

Authorized by Mário Mesquita, Deputy Governor for Economic Policy.

General Control of Publications

Banco Central do Brasil

Secre/Surel/Dimep

SBS – Quadra 3 – Bloco B – Edifício-Sede – 1º andar

Caixa Postal 8.670

70074-900 Brasília – DF – Brazil

Phones: (5561) 3414-3710 and 3414-3567

Fax: (5561) 3414-3626

E-mail: editor@bcb.gov.br

Consumer Complaints and Public Enquiries Center

Address:	Secre/Surel/Diate
	Edifício-Sede – 2º subsolo
	SBS – Quadra 3 – Zona Central
	70074-900 Brasília – DF – Brazil
Fax:	(5561) 3414-2553
Internet:	http://www.bcb.gov.br/?english

Behavior and Effects of Equity Foreign Investors on Emerging Markets*

Barbara Alemanni**
José Renato Haas Ornelas***

Abstract

The Working Papers should not be reported as representing the views of the Banco Central do Brasil. The views expressed in the papers are those of the authors and do not necessarily reflect those of the Banco Central do Brasil.

This paper analyzes empirically the behavior of foreign investors on emerging equity markets in a cross-country setting, including 14 emerging markets from the year 2000 to 2005. We could find little evidence that these investors have brought problems to local emerging markets. Foreign investors seem to build and unwind their positions on emerging stock markets slowly enough to avoid problems as price pressure or volatility and kurtosis upswings on the stock market. Also, no negative effects on the foreign exchange market could be found. Regarding feedback trading, we support two hypotheses: positive feedback trading by hedged investors and negative feedback trading by unhedged investors. The latter has stronger statistical evidence and is more likely to occur in the real world. We conclude that there is no reason to impose long-term restrictions to foreign flows.
Keywords: Feedback Trading, Portfolio Flows, Emerging Markets, Foreign Investors.
JEL Classification: G14, G15, G18.

* This paper is a revised version of a Chapter from the Ph.D. dissertation of the second author's, which was written in the Bocconi University, under the supervision of the first author.
** Università degli Studi di Genova, alemanni@economia.unige.it
*** Banco Central do Brasil. Corresponding author. jrenato.ornelas@bcb.gov.br.

1) Introduction

After being the major paradigm on finance for a long time, the efficient market paradigm has been challenged by the behavioral approach. One main difference of the behavior approach is that rational investors are often not numerous and powerful enough to keep the market efficient against the so-called noise traders. This type of investor is assumed to have some behavioral biases when trading. Several studies empirically analyze the behavior of investors looking for these biases, grouping them by categories: individual or institutional, foreigner or domestic.

The goal of this article is to analyze empirically the behavior and effects of foreign investors on emerging equity markets in a cross-country setting. In order to analyze the behavior, tests of feedback trading are performed. To analyze the effects of foreign trading on local markets, we check to relationship between foreign trading volume and risk measures, and evaluate if some kind of restriction or regulation should be imposed to capital flows.

The main contribution of this study is to analyze the behavior and effects of foreign investors in a diversified set of emerging markets. Also, the study will be the first to deal with the behavior of foreign equity investors in some markets, especially those from Eastern Europe. Previous papers analyzing foreign investors' behavior in emerging markets with emphasis on feedback trading, either use a sub-set of foreign investors (US investors in Bohn and Tesar [1996] and Brennan and Cao [1997] and Clients of a Global Custodian in Froot et al [2001]) or a sample very concentrated in Asian countries (Richards [2004] and Griffin et al [2004]). Our study also considers the possibility of foreigners to invest with or without currency hedge, while previous studies overlook this important point.

The remaining of this paper is structured as follows: Section 2 makes a literature review of the behavioral biases connected to this research, including an analysis of the literature about foreign investors' behavior; Section 3 focuses on feedback trading behavior by foreign investors; Section 4 analyses the effects on local markets of foreign trading; and Section 5 concludes the article with some implications for policy and other regulatory issues.

2) Literature Review

The literature about the behavior and the effects of foreign investors on stock markets has two main points. One focuses on granger causality or concurrent movement between stock's returns and foreign flows. The other focuses on anomalies that may cause destabilizing effects such as positive feedback trading, herding, volatility jumps and price pressure.

Some articles build theoretical models based on information asymmetries between foreign and local investors. The local investors would have an information advantage that would impact prices. Price movements would then be a signal to foreigners, leading to positive feedback trading by this type of investors. One of the results (Brennan and Cao, 1997) is that there is a contemporaneous relationship between local market returns and foreign portfolio flows. The empirical research of Bohn and Tesar (1996) and Brennan and Cao (1997) uses quarterly data of US investments on foreign equity markets (developed and emerging), finding a positive contemporaneous correlation of these flows and local returns on most of the countries analyzed. However, this may be due to positive correlation of flows with lagged returns at higher frequencies.

The article of Froot, O'Connell, Seasholes (2001) analyzes daily foreign equity flow data from one of the world's largest global custodians. They find evidence of positive feedback trading, and also that these flows have forecasting power for future returns of emerging markets, i.e., foreigners may be able to anticipate price movements. Comparing results of daily, monthly and quarterly data they argue that most of the contemporaneous correlation of flows and returns at monthly and quarterly frequencies are due to positive feedback at daily frequency. These results should be considered with caution because of possible bias of their database. First, they consider just one custodian, that although is very large, may not be representative of the universe of foreign investors in the world. Also, their database records have the settlement date of trades, instead of actual trading date. They rely on country's usual settlement conventions to convert settlement date to trade date. This may induce some systematic errors.

Other two empirical studies use daily data to analyze foreign flow to emerging markets, but mainly Asian markets. Richards (2004) studies five Asian countries while

Griffin, Nardari and Stulz (2004) consider a sample with 9 emerging countries (seven of them in Asia, plus Slovenia and South Africa). Both find evidence of positive feedback trading at daily frequency. Also, flow impacts future returns on daily basis for most of the countries in their sample.

There are several other articles that analyze the issue of feedback trading and contemporaneous relationship between foreign flows and local returns. Table 1 shows a survey of these articles. Evidence of feedback trading is found on 9 of the 11 studies, while evidence of contemporaneous relationship between flow and returns is present in all articles that have tested it.

One issue usually overlooked by the literature is the choice of the currency used to calculate index returns and evaluate feedback trading. If foreigners invest in emerging markets without making currency hedge, then one should use returns in USD or other foreign currency. However, if foreigners use hedge instruments to neutralize the local currency return, then one should use returns in local currency. The studies on this area focus on just one way to identify feedback traders, and usually they consider hedged foreign investors. For small emerging economies, the derivatives markets are not very developed and so hedging opportunities seem not to be very widely available. Even on the big emerging markets, it is unlikely that foreigners use hedge instruments when investing in equities, since the pay-off to be hedged is uncertain, and thus it would be necessary a hedging strategy with a short periodicity.

One possible explanation for the contemporaneous relationship between foreign flows and local returns is the price pressure: it may be the case that trading volumes of foreign investors are very high for the size of emerging markets, what may cause price pressures due to low liquidity of such markets. Clark and Berko (1996) used Warther (1995) approach to evaluate price pressure by foreign investors in the Mexican stock market, but they did not find any price pressure in the Mexican market. Also Dahlquist and Robertsson (2004) found no evidence of price pressure for the Swedish market: foreigners' net inflows are coupled with significant increases in prices, but there is no price reversion after these price increases. Also Froot and Ramadorai (2001) found no evidence of price pressure on institutional equity flows.

TABLE 1 – Survey of the Literature

Article	Frequency	Flows' Origin	Flows' Destination	Period	Contemporaneous Relationship	Feedback Trading
Bohn and Tesar (1996)	Quarterly	US	17 Developed and 5 EM	1980-1994	Yes	-
Brennan and Cao (1997)	Quarterly	US	5 Developed and 16 EM	1982-1994	Yes	-
Albuquerque et al (2004)	Quarterly	US	G7	1977-2000	Yes	Yes, Positive
Froot, O'Connell, Seasholes (2001)	Daily	Global Custody	16 developed and 28 EM	1994-1998	-	Yes, Positive
Griffin, Nardari and Stulz (2004)	Daily	All	9 EM, mostly Asian	1996-2001	Yes	Yes, Positive
Richards (2004)	Daily	All	5 Asian EM	1999-2002	-	Yes, Positive
Clark and Berko (1996)	Monthly	All	Mexico	1989-1996	Yes	No
Choe, Kho and Stulz (1999)	Daily	All	Korea	1996-1997	Yes	Yes, Positive
Chen (2002)	Daily	All	Taiwan	1995-2000	Yes	Yes, Positive
Batra (2003)	Daily	All	India	2000-2002	Yes	Yes, Positive
Tabak (2003)	Monthly	All	Brazil	1990-1998	Yes	-
Bowe and Domuta (2004)	Daily	All	Indonesia	1997-1999	-	No
Dahlquist and Robertsson (2004)	Monthly	All	Sweden	1993-1998	Yes	Yes, Positive
Adabag and Ornelas (2005)	Monthly	All	Turkey	1998-2004	Yes	Yes, Negative

The analysis of flow and returns may also be extended to consider other variables. Some articles include the returns of world or developed markets to explain flows and returns. Although they can explain part of the variation, lagged flow and returns are still relevant explanatory variables. A number of other exogenous explanatory variables are used such as bonds' returns, country risk, etc (see for instance Dahlquist and Robertsson 2004 and Adabag and Ornelas 2005). The paper of Portes and Rey (2000) tries to explain flows using variables linked to information asymmetry, such as the real distance between countries and the phone call traffic.

Another interesting issue to analyze is the statistical properties of equity flows, especially the persistence and correlation. Froot and Donohue (2002, 2004) find evidence of highly persistent portfolio flows of institutional investors, both across countries and at the level of individual funds. Froot et al (2001) find highly persistent inflows and outflows

of the equity flows they analyzed, with slightly positively correlation across countries, but with a stronger correlation within regions.

The explanation for this persistence may be informed trading: foreign investors have some private information, and try to use it not instantaneously but gradually during a certain interval of time. Albuquerque et al (2004) reports this gradual behavior by American investors. Similar explanation relies on overconfidence, where investors trade gradually, but using imaginary private information (Odean and Gervais 2001). The persistence may be also explained by contagion or herd behavior, where investors mimic the actions of others. An explanation using wealth effects is also given: the richer the investors become less risk-averse as their wealth increases and then they continue to invest.

Several studies show that foreign trading may lead to destabilizing effects on local markets especially during crisis and so some countries imposed rules to prevent sudden outflow (Kim and Singal, 2000). However, some authors argue that neither positive feedback trading nor herding are necessarily destabilizing. Choe, Kho and Stulz (1999) find no evidence that trades by foreign investors had a destabilizing effect in the Korean case, as the market adjusted quickly and efficiently to large sales by foreign investors and these sales were not followed by negative abnormal returns amplifying their impact. The results of Bowe and Domuta (2004) suggest that the trading of foreign investors did not severely exacerbate market movements in Indonesia at the time of the 1997 Asian crisis. In the case of herding, if institutional investors are better informed than individual investors, they would be likely to follow a herding behavior to undervalued stocks and away from overvalued stocks. Bekaert and Harvey (2000) analyzed market liberalization of 20 emerging markets during late 1980s or early 1990s, finding a small but mostly insignificant increase in the volatility of stock returns following capital market liberalizations.

If these destabilizing effects are not a consensus, some positive effects appear in several papers in the literature, especially the greater risk sharing and higher market liquidity, which lead to lower expected returns (see for example Clark and Berko (1996) and Henry(2000a)). Bekaert and Harvey (1998) documented also other positive effects as lower Exchange Rate volatility, less long-term country debt and lower inflation, among others. Henry (2000b) documented a favorable effect also on the growth rates of private investment, after emerging markets liberalize their stock markets.

Concluding, the study of the behavior of foreign investors can provide good insights of how regulators should cope with the effects of foreign trading on emerging equity markets. Foreign trading on stock markets may also affect foreign exchange market as shown in Gagnon (2004), so the implications of this kind of regulation are not restricted to the stock market.

3) Feedback Trading and Information Asymmetry

3.1) Variables and Data

The two main variables to be used are the net flow of foreign investors to emerging equity markets (equity purchases minus equity sales) and the returns of the emerging markets stock indexes.

Returns of stock indexes are not difficult to obtain or calculate. However, it is not easy to obtain data from equity foreign flows. The ideal situation is when a daily time series of the purchase and sales by foreign investors is available. However, daily time series are available only for Asian countries. In order to enlarge the number of countries in the analysis, the periodicity used on this research will be monthly. Table 2 shows the sample of countries (or markets) where we were able to obtain the net portfolio flow of foreigners[1]. Also the source of information is showed as well as the number of observations and time period. This sample was obtained after a search on websites of stock exchanges, central banks and market regulators of over 60 emerging markets. We believe that this sample of 14 markets is representative of the emerging markets universe, since we have countries that have a reasonable proportion of the market capitalization from Asia, Eastern Europe, Latin America and Africa. Also, we have markets with different sizes, from very small like Bulgaria and Romania to large markets like Taiwan and South Africa (see Table 4).

[1] Data from Kenya and Zambia is also available. However, due to infrequent trading by foreigners and low liquidity of local markets, we decided not to use these countries. It is also available data from Chile and Czech Republic, but due to the low number of observations to perform an econometric analysis, these countries were not included also.

TABLE 2 - Sample of Foreign Flow Data

Country	Time period		Number Observ.	Source
Bulgaria	10/2000	07/2005	58	Bulgarian National Bank
Brazil	01/2000	08/2005	68	Central Bank of Brazil
Estonia	01/2000	07/2005	67	Bank of Estonia
Hungary	01/2000	04/2004	52	Central Bank of Hungary
Indonesia	01/2000	09/2005	69	Jakarta Stock Exchange
India	01/2000	09/2005	69	SEBI - Securities & Exchange Board of India
South Korea	01/2000	08/2005	68	Korea Stock Exchange
Lithuania	01/2001	07/2005	55	Bank of Lithuania
Philippines	01/2000	08/2005	68	Central Bank of Philippines
Poland	01/2000	07/2005	67	National Bank of Poland
Romania	01/2000	08/2005	68	Bucharest Stock Exchange
Turkey	01/2000	09/2005	69	Istanbul Stock Exchange
Taiwan	01/2000	08/2005	68	Taiwan Stock Exchange
South Africa	01/2000	08/2005	68	Johannesburg Stock Exchange

One possible shortcoming with the data is that net purchases by foreigners of ADRs are not included, except for Brazil. As trading with ADRs is likely to be largely between foreigners, it should not alter the results significantly. For India, we have only the flow of institutional foreign investors. The high information and transaction costs to invest small amounts makes this kind of investor use mutual funds in order to enter foreign markets. So the error in ignoring small investors should be irrelevant, although previous papers identify that they use to behave in a different manner.

The period of time covers approximately 5 years from 2000 to 2005, which is almost entirely after the period of first papers in this area (Bohn and Tesar [1996], Brennan and Cao [1997], Froot et al [2001]). Also, the sample of countries used here contains a diversified set of emerging countries, including seven European countries that have never been analyzed yet. Although for several countries in the sample there is data available for some years before the year of 2000, we decided not to use this period, in order to make the time period more or less homogenous across countries, so that results are comparable.

The use of monthly data is not the ideal for studying the short-term lead-lag dynamics between flows and returns since eventual contemporaneous relationships at monthly frequency would be due to feedback trading at a lower frequency. Daily data, however, may include microstructure noise. As most international investors are more likely to have their decision and evaluating process at a monthly or even quarterly frequency, we believe

that the use of monthly data may give good insights about the behavior of such investors. However, it is worth to mention that although the periodicity of our flow data is monthly, the return's data used to calculate the risk measures (volatilities and kurtosis) has daily periodicity. Therefore the analysis of the effects of foreign trading on Section 4 benefits from daily data of the risk measures.

The foreign flow used in this study will be normalized by the market capitalization in order to make them comparable across countries. The stock indices and market capitalization used here come from the broad index given by the stock exchanges to the World Federation of Exchanges (www.world-exchanges.org). For the markets where index data is not available at World Federation of Exchanges or the available data does not cover the period, the DataStream index and market capitalization is used, when available. Finally, for the two Baltic countries and Bulgaria, the index and market capitalization were obtained at their stock exchanges, since neither DataStream nor World Federation of Exchanges provide index information for these countries. Table 3 shows the source and name of the indices used.

The main characteristics of the sample are showed in Table 4. The net flow of foreign investors is normalized by the market capitalization to facilitate comparison among countries. For 11 out of 14 markets, the average net inflow is positive during the sample period, while for 3 countries - the smallest in terms of market capitalization - the mean is negative.

One important issue regarding the returns is whether they should be calculated using the local currency or some foreign currency as the US dollar. If we consider returns in local currency, we are assuming that foreigners make currency hedge when investing in emerging markets, while using US dollar returns assumes unhedged investments for investors that uses US dollar as working currency[2]. Thus, the concept of feedback trading will depend on the type of investment: hedged or unhedged. It can be found on the literature studies using both returns in local currency and USD. On this research, both types of returns will be used when analyzing feedback trading in order to identify what (if any) influence foreign investors.

[2] The ideal would be to consider a basket of currencies with weights based on the nationality of the foreign investors, but this information is not available.

However, we have to point out that the currency hedge by foreign investors to equity is not common. First because de currency derivatives in some of the countries in this sample is a very tigh market, when it exits. Second, because the payoff of equity investment is volatile, so that a hedge would need to be adjusted with a high frequency. Therefore, we would focus our attenttion on the USD Returns rather than local currency returns.

TABLE 3 - Source of Index and Market Capitalization Data

Country/ Market	Source	Index's Name
Bulgaria	DataStream	BSE SOFIX
Brazil	World Federation of Exchanges	IBOVESPA
Estonia	OMX	OMX Tallinn index
Hungary	DataStream	DataStream
Indonesia	World Federation of Exchanges	Composite
India	DataStream	DataStream
South Korea	World Federation of Exchanges	KOSPI
Lithuania	OMX	OMX Vilnius index
Philippines	World Federation of Exchanges	PSE COMPOSITE
Poland	World Federation of Exchanges	WIG
Romania	DataStream	DataStream
Turkey	World Federation of Exchanges	ISE NATIONAL 100
Taiwan	World Federation of Exchanges	TAIEX
South Africa	World Federation of Exchanges	FTSE/JSE All Share

TABLE 4 – Main Characteristics of the Sample

			Net Flow / Market Capitalization		Market Capitalization
Country	**Time period**		**Mean**	**Std Deviation**	**(USD Millions)**
Bulgaria	10/2000	07/2005	-0.18%	1.19%	686
Brazil	01/2000	08/2005	0.10%	0.20%	204,850
Estonia	01/2000	07/2005	-0.15%	1.98%	2,978
Hungary	01/2000	04/2004	0.04%	0.56%	10,326
Indonesia	01/2000	09/2005	0.11%	0.54%	40,441
India	01/2000	09/2005	0.21%	0.25%	156,985
South Korea	01/2000	08/2005	0.20%	0.42%	213,771
Lithuania	01/2001	07/2005	-0.01%	0.32%	2,888
Philippines	01/2000	08/2005	0,09%	0,32%	27,683
Poland	01/2000	07/2005	0.01%	0.39%	35,719
Romania	01/2000	08/2005	0.15%	0.62%	3,839
Turkey	01/2000	09/2005	0.07%	0.30%	60,707
Taiwan	01/2000	08/2005	0.21%	0.36%	336,759
South Africa	01/2000	08/2005	0.08%	0.14%	235,026

3.2) Foreign Flow x Returns

In order to analyze the Granger causality of between the net foreign flows and returns and between the net flow and the volatility, the following pooled regressions are estimated:

$$R_{k,t} = c_{1,k} + \sum_{i=1}^{n} \alpha_i R_{k,t-i} + \sum_{i=1}^{n} \beta_i FF_{k,t-i} + \varepsilon_{1,k,t} \quad (3.1)$$

$$FF_{k,t} = c_{2,k} + \sum_{i=1}^{n} \delta_i FF_{k,t-i} + \sum_{i=1}^{n} \gamma_i R_{k,t-i} + \varepsilon_{2,k,t} \quad (3.2)$$

Where $FF_{k,t}$ is the Net Foreign Equity Portfolio Investment as a percentage of market capitalization of country *k* at time *t*; $R_{k,t}$ is the return in local currency or USD of the equity index of country *k* at time *t*, and the *c*'s are constants.

Testing some restrictions on the above equations is possible to evaluate the Granger causality between the variables for each country. Specifically, a Wald-F test can be used to check the following hypothesis:

- H1: FF does not Granger cause Return: $\beta_i = 0, \ i = 1 \text{ to } n$
- H2: Return does not Granger cause FF: $\gamma_i = 0, \ i = 1 \text{ to } n$

For the regressions of this section, only the first lag of flows and returns were significant. However, as the regressions of the following sections showed significant second lags, we decided to report all regressions in the paper with 2-lag structure ($n = 2$) in order to keep them comparable. As mentioned before the analysis will be carried out using both returns in local currency and in USD.

Results are on Table 5 and are in favor of feedback trading. However, they have different results depending on the currency of returns: while the feedback to USD returns is negative (Panel A), the feedback to local currency is positive (Panel B).

We have two possibilities to explain these results: first, foreigners are currency-hedged investors engaging in positive feedback trading as seen in Panel B of Table 5; second, foreigners are currency-unhedged investors using negative feedback trading as seen in Panel A of Table 5. We cannot distinguish between these two possibilities (or even both together) since we do not know the hedging strategy of foreign investors. The key for this puzzle may be a possible negative correlation between local equity returns and local currency returns. On this case, both possibilities may be true at the same time. In the next

section we will come back to this point, adding currency returns to the analysis in order to find an explanation for this puzzle.

There is also strong evidence of flow persistence up to 2 lags on both panels of Table 5. On the equations with Return as dependent variable, there is no support for the hypothesis that flows affect future returns causing a price pressure or that foreigners have some kind of information advantage or disadvantage about future returns. Although first order autocorrelation in returns is not found, there is a weak evidence of second order negative autocorrelation on both USD and local currency returns.

Regarding Granger-causality, there is evidence in Table 5 of Returns Granger-causing Flows, and this evidence is stronger for USD Returns than for local returns. On the other direction, there is no evidence that flows Granger-cause returns. The results of this section are based on a bivariate analysis so we will check them on the next section using a set of control variables.

TABLE 5 – Flow x Returns

Panel A: Flow x USD Returns
Equations (3.1) and (3.2)

	Flow		USD Returns		Granger Causality	Adj R^2
Dependent Variable	**Lag: 1M**	**Lag: 2M**	**Lag: 1M**	**Lag: 2M**		
Flow	0.218[a]	0.058[c]	-0.002[b]	-0.001	5.33%	8.34%
USD Returns	0.4196	-0.0301	0.0141	-0.064[c]	24.40%	0.46%

Panel B: Flow x Local Returns
Equations (3.1) and (3.2)

	Flow		Local Returns		Granger Causality	Adj R^2
Dependent Variable	**Lag: 1M**	**Lag: 2M**	**Lag: 1M**	**Lag: 2M**		
Flow	0.205[a]	0.054[c]	0.008[a]	-0.0013	0.00%	8.91%
Local Returns	0.027	0.270	0.003	-0.057[c]	47.60%	0.60%

Granger Causality: It is shown the p-value of a Wald test with null hypothesis that all coefficients of the exogenous variable are equal to zero.
The coefficients significantly different from zero at 5% are in gray
a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%
Estimation Method: SUR weighted least squares[3] for each regression, using Fixed Effects.

[3] Feasible GLS specification correcting for both cross-section heteroskedasticity and contemporaneous correlation. Also known as Parks estimator.

3.3) Foreign Flow x Returns: Adding Control Variables

So far the analysis has been restricted to two endogenous variables: Flow and Returns. But it may be the case that some external variables have strong influence on our model. These variables may affect our endogenous variables, and therefore an analysis considering these factors should be done. For this purpose we use pooled regressions of the type:

$$R_{k,t} = c_{1,k} + \sum_{i=1}^{n} \alpha_i R_{k,t-i} + \sum_{i=0}^{n} \beta_i FF_{k,t-i} + \Phi V + \varepsilon_{1,k,t} \quad (3.3)$$

$$FF_{k,t} = c_{1,k} + \sum_{i=1}^{n} \delta_i FF_{k,t-i} + \sum_{i=0}^{n} \gamma_i R_{k,t-i} + \Phi V + \varepsilon_{2,k,t} \quad (3.4)$$

where $\boldsymbol{V}$ is a vector with the control variables and $\boldsymbol{\Phi}$ is a vector of its coefficients.

Note that equations (3.3) and (3.4) above include the contemporaneous coefficient of the other endogenous variable. This is due to the presence in the literature (see table 2) of many papers that have found a contemporaneous relationship between foreign inflow and returns. Therefore these coefficients are also included as control variables. The above regressions are analyzed with both local and USD returns.

About the control variables to be used, one common choice in the literature is the returns of developed countries stock indices, expecting a positive influence over emerging markets. We use an index from developed countries (the FTSE AW Developed) for all markets. As a robustness check, we tested also a specification using regional indexes considering the developed countries of each region, and results were similar, although slightly weaker.

Control variables representing the risk premium of emerging countries may also be used. One of the most known indicators of emerging market risk premium is the Spread over Treasury of JPMorgan's EMBI+ (Emerging Market Bond Index). This spread is the number of basis points that the USD Sovereign bonds' term structure of the country is above the US Treasury curve, and is seen as a measure of the country's risk. It is expected that the higher this spread, the lower is the value of stocks in the country, since fundamentalist models use this spread when calculating the rate used to discount the future cash flows. As we are using returns and flows (and not prices and stock) as endogenous variables, we have to use the first difference of the EMBI Spread as the control variable.

Since not all the countries in our sample are included in the EMBI for this period, we consider a specification with the composite EMBI spread for all countries. As a robustness check, we tested other specifications with the country-specific EMBI when available, or with the composite or regional EMBI, otherwise. Results for both specifications were very similar.

Given the opposite results of the previous section regarding feedback trading for USD or Local returns, the Foreign Exchange (FX) Returns may be used to decipher this puzzle. Therefore, on the Local version of the Structural VAR, the Returns of Foreign Exchange (denominated as Local Currency per USD Dollars) are used as a control variable. In this way, we would have the USD Returns as a composition of FX Returns and Local Stock Returns on equation (3.4). Therefore, we can check if foreign investors care about FX returns in addition to Stock Returns in local currency. Also, by adding FX Returns on equation (3.3), we can assess a possible positive correlation between FX returns and Stock Returns in local currency. Theoretically, on the long-run both should have an inflation component, especially in emerging markets, and this component would make higher the companies' earnings, pushing up their returns in local currency. Also, an inflation consistently higher than US inflation would make the local currency to loose value, leading to a negative correlation between the value of local currency and local stock returns.

For the control variables, the contemporaneous coefficient and the first lag are used. Further lags up to the 4th were tested but were not significant.

The specification of equations (3.3) and (3.4) for USD Returns is the following:

$$R_{k,t} = c_{1,k} + \sum_{i=1}^{2} \alpha_i R_{k,t-i} + \sum_{i=0}^{2} \beta_i FF_{k,t-i} + \sum_{i=0}^{1} \gamma_i FTSE_{k,t-i} + \sum_{i=0}^{1} \delta_i EMBI_{k,t-i} + \varepsilon_{1,k,t} \quad (3.5)$$

$$FF_{k,t} = c_{2,k} + \sum_{i=0}^{2} \phi_i R_{k,t-i} + \sum_{i=1}^{2} \varphi_i FF_{k,t-i} + \sum_{i=0}^{1} \mu_i FTSE_{k,t-i} + \sum_{i=0}^{1} \rho_i EMBI_{k,t-i} + \varepsilon_{2,k,t} \quad (3.6)$$

Where $FF_{k,t}$ is the Net Foreign Equity Portfolio Investment as a percentage of market capitalization of country k at time t; $R_{k,t}$ is the return in USD of the equity index of country k at time t, FTSE is the USD returns of the FTSE AW Developed index, EMBI is the first difference of the spread of the EMBI+ from JP Morgan[4], and the c's are constants. The time series of the control variables were obtained with DataStream and Bloomberg.

[4] We are using the spread denominated in percentage points and not basis points.

The specification of equations (3.3) and (3.4) for Local Returns is the following:

$$R_{k,t} = c_{1,k} + \sum_{i=1}^{2} \alpha_i R_{k,t-i} + \sum_{i=0}^{2} \beta_i FF_{k,t-i} + \sum_{i=0}^{1} \gamma_i FTSE_{k,t-i} + \sum_{i=0}^{1} \delta_i EMBI_{k,t-i} + \\ + \sum_{i=0}^{1} \xi_i FX_{t-i} + \varepsilon_{1,k,t} \tag{3.7}$$

$$FF_{k,t} = c_{2,k} + \sum_{i=0}^{2} \phi_i R_{k,t-i} + \sum_{i=1}^{2} \varphi_i FF_{k,t-i} + \sum_{i=0}^{1} \mu_i FTSE_{k,t-i} + \sum_{i=0}^{1} \rho_i EMBI_{k,t-i} + \\ + \sum_{i=0}^{1} \psi_i FX_{k,t-i} + \varepsilon_{2,k,t} \tag{3.8}$$

Where $FF_{k,t}$ is the Net Foreign Equity Portfolio Investment as a percentage of market capitalization of country *k* at time *t*; $R_{k,t}$ is the return in local currency of the index of country *k* at time *t*, FTSE is the return of the FTSE AW Developed index in local currency, EMBI is the first difference of the spread of the EMBI from JP Morgan, FX is the return of the exchange rate denominated in local currency per US Dollar, and the *c*'s are constants. For the two Baltic Republics, Estonia and Lithuania, the Foreign Exchange Returns were not used, since these countries had their currencies pegged to the Euro during the entire period of our sample.

Results are on Table 6. The control variables have several significant coefficients, especially the developed countries' index. While the EMBI is significant only when USD Return is the dependent variable, the FSTE returns are significantly positive in all regressions, sometimes the first lag, sometimes the contemporaneous coefficient. The contemporaneous positive relationship between returns and flows were present only when flows are the depend variable. The FX returns seem to have influence on local returns. Nevertheless, the control variables added were responsible for a significant increase on the adjusted R^2 only of the USD Return's Regression (Panel A), where both FTSE and EMBI were significant.

Table 6 shows evidence of feedback trading even stronger than in Table 5. The feedback trading is still positive for local currency returns and negative for USD returns, now with a coefficient significant at 1%.

The coefficient of the 1-month-lag FX returns on the regression with Local Returns as dependent variable is positive and significant, shedding a light on the opposite results for feedback trading for USD and Local Returns seen both on Table 5 and 6. The variation of

local indices tends to be reversed or at least offset by the variation of the foreign exchange, so that the variation of the stock index in USD turns out to be smaller in absolute terms or even has the opposite sign of local returns. Therefore, the hypothesis of positive feedback trading by hedged investors and negative feedback trading by unhedged investors are not incompatible, and may occur at the same time.

Results of table 6 reject both information advantage and disadvantage by foreign investors, as flows are not able to predict neither Local Returns nor USD Returns. This can be seen also as evidence that foreign flows does not create any kind of price pressure over emerging equity markets. The persistence of flows is present on the first two lags on Table 6, while there is some evidence of negative serial autocorrelation for local currency returns.

In general, the analysis is not significantly improved by these control variables, except for the case of equation (3.5) where we have USD Returns as dependent variable, where the inclusion of the EMBI and developed countries' index showed to be important, although it did not change results for feedback trading.

TABLE 6 – Flow x Returns with Control Variables

Panel A: Flow x USD Returns
Equations (3.5) and (3.6)

Dependent Variable	USD Returns			Flows			EMBI		FTSE		Adjusted R2
	0 Lag	1 Lag	2 Lags	0 Lag	1 Lag	2 Lags	0 Lag	1 Lag	0 Lag	1 Lag	
Flow	0.005[a]	-0.003[a]	-0.0004	-	0.213[a]	0.067[b]	0.000	0.000	0.0053	0.009[b]	9.0%
USD Returns	-	-0.0173	-0.0480	-0.131	0.497	-0.072	-0.014[a]	-0.013[b]	0.946[a]	0.061	21.5%

Panel B: Flow x Local Returns
Equations (3.7) and (3.8)

Dependent Variable	Local Returns			Flows			EMBI		FTSE		FX		Adjusted R2
	0 Lag	1 Lag	2 Lags	0 Lag	1 Lag	2 Lags	0 Lag	1 Lag	0 Lag	1 Lag	0 Lag	1 Lag	
Flow	0.003[a]	0.008[a]	-0.002	-	0.174[a]	0.107[a]	0.000	0.000	0.005	0.010[a]	0.001	-0.001	7.3%
Local Returns	-	-0.100[a]	-0.089[b]	0.758	-0.855	-0.182	-0.007	0.009	0.260[b]	0.343[a]	0.075	0.149[a]	1.6%

Estimation Method: SUR weighted least squares, using Fixed Effects.
a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%

3.4) Robustness Checks

This section performs some robustness checks regarding the currency used on Returns. On the previous sections the return on USD and local currency were used. However, it is possible that foreign investors look at the relative return among emerging equity markets, especially hedge funds using long-short strategies. Therefore, this section evaluates the behavior of foreign investors using the return of each market in excess of the average return of the sample, weighted by the market capitalization. The excess return is calculated considering both hedge and unhedged investors, i.e., excess returns in Local Currency and in USD.

The specification is the following:

$$ER_{k,t} = c_{1,k} + \sum_{i=1}^{2} \alpha_i ER_{k,t-i} + \sum_{i=1}^{2} \beta_i FF_{k,t-i} + \varepsilon_{1,k,t} \quad (3.9)$$

$$FF_{k,t} = c_{2,k} + \sum_{i=1}^{2} \phi_i ER_{k,t-i} + \sum_{i=1}^{2} \varphi_i FF_{k,t-i} + \varepsilon_{2,k,t} \quad (3.10)$$

Where $ER_{k,t}$ is the difference of the country's index return and the return of an index of 14 markets of our sample weighted by market capitalization, for each country k and time t. These equations are used with local currency and USD returns.

Table 7 shows the results. As in the previous sections, the persistence of flows is still present for both specifications and past flows do not appear to influence future excess returns. Interestingly, the excess returns have significant negative coefficients, which means that the countries that are above the average in one month tend to be below the average on the following one or two months. This can be explained by liquidity issues: big investors tend to build and unwind their positions on the more liquid markets and then go to smaller markets.

We found evidence of negative feedback trading for USD Excess Returns since both coefficients of Returns on the Flow equation are negative and significant. However, when using Local Excess Returns, no evidence of feedback trading is found. Therefore, this robustness check supports the hypothesis of unhedged foreign investors engaging on negative feedback trading instead of hedged investors engaging on positive feedback trading.

TABLE 7 –Flow x Excess Returns with Control Variables					
Panel A: Flow x Excess USD Returns Equations (3.9) and (3.10)					
	Flow		**Excess USD Returns**		**Adj R^2**
Dependent Variable	**Lag: 1M**	**Lag: 2M**	**Lag: 1M**	**Lag: 2M**	
Flow	0.2186[a]	0.0667[b]	-0.0045[a]	-0.0022[b]	8.68%
Excess USD Returns	-0.0108	-0.0712	-0.0816[b]	-0.1001[a]	1.62%
Panel B: Flow x Excess Local Returns Equations (3.9) and (3.10)					
	Flow		**Excess Local Returns**		**Adj R^2**
Dependent Variable	**Lag: 1M**	**Lag: 2M**	**Lag: 1M**	**Lag: 2M**	
Flow	0.1891[a]	0.0532	-0.0020	0.0001	7.66%
Excess Local Returns	0.0585	0.1540	-0.0870[b]	-0.0713[b]	2.19%

a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%
Estimation Method: SUR weighted least squares, using Fixed Effects.

3.5) Conclusion

The empirical evidence regarding feedback trading through this section supports two hypotheses: positive feedback trading by hedged investors and negative feedback trading by unhedged investors. The latter has stronger evidence, but we cannot refute the possibility that both occur together, and the behavior of currency returns is responsible for making this possible. When considering only the excess return over the emerging market mean, we found no evidence of feedback trading by hedged but unhedged investors still seem to be negative feedback traders. As discussed before, it is more likely that foreign investors are currency unhedged than hedged, so the negative feedback trading is the most reasonable hypothesis.

Comparison with previous literature should consider whether returns used are in local currency or USD. Our results are in line with the positive feedback trading found in previous studies that use local currency returns (e.g., Richards (2004), Griffin, Nardari and Stulz(2004)). However, results of Froot, O'Connell, Seasholes (2001), that use USD returns, show positive feedback trading up to 40 trading days using daily data. The difference to our negative feedback findings may be attributable to the sample. They used data from 1994 to 1998 and we used data from the 2000 to 2005 period; also they used data

from a specific custodian only, whereas we used data from all investors in the market. Another difference with the sample is that we have more Eastern Europe markets than Froot, O'Connell, Seasholes (2001), and they actually found negative feedback trading with the Emerging Europe subsample. So it may be the case that foreign investors in these european countries behave in a different way, engaging in negative feedback trading.

One important issue is how this behavior affects emerging markets. Positive feedback traders are blamed to exacerbate price movements, so they would be prejudicial considering local currency movements. But if foreigners were also negative feedback traders considering USD returns, what would be the effect after all? If we think of USD return as a return that adjusts currency fluctuations caused by inflation[5], then this effect would be beneficial to the long-term stability of emerging stock markets. So a temporary exacerbating effect in local currency stock returns is offset by the exchange rate dynamics, creating an effect that is not prejudicial in the end. Next section will go deeper in the effects of foreign investors to emerging markets.

Another issue on the effect of foreign investors is how informed are foreigners. If such investors have superior information about local markets, then they would be beneficial to keep those markets efficient. However, our results show no evidence of informational advantage or disadvantage by foreign investors using polled data. There is just some weak evidence of informational disadvantages for special cases, like South Korea. This hypothesis of informed trading cannot be distinguished from the price pressure hypothesis, i.e., if foreigners have superior information and anticipate price movements or if their trading causes a pressure on prices. So we found no evidence of price pressure. In contrast, the articles of O'Connell, Seasholes (2001) and Richards (2004) found that foreign trading does have an impact on local prices. The differences may be again attributable to the sample.

The persistence of foreign flows documented in the literature (e.g. Froot and Donohue (2002,2004)) is corroborated by our empirical findings. The evidence of serial autocorrelation in stock returns is very weak, being relevant only for the two Baltic countries of the sample.

[5] in this case, we are assuming that inflation of emerging countries is higher that US inflation.

4) Effects on Local Markets

The presence of foreign portfolio investors in emerging markets is often associated to financial crisis. Differently from the foreign direct investments, the portfolio investments tend to be volatile, entering and exiting emerging markets with a speed sometimes undesirable, causing volatility in equity and foreign exchange markets. Some articles focus on the behavior of foreign equity investors during financial crises, like Choe et al (1999), which investigates the Asian crisis of 1997. This section will analyze the effect of foreign investors during the period of 2000 to 2005. This period comprises some events that brought volatility to the equity on developed and emerging markets (e.g. the burst of the internet bubble in 2000 and Iraq's invasion in 2003). Crisis in emerging markets during this period were restricted to South America: Argentina in 2001 and Brazil in 2002. As Argentina is not in our sample (data is not available), a possible event study may be restricted to Brazil. Thus, this section analyzes the effects of foreign investors during "normal" up and down swings, and not as an event study of crisis.

The main contribution of this section is to assess the effects of foreign trading on volatility in a multi-country setting of emerging markets. Also, we assess the effects on Kurtosis of equity returns and on foreign exchange markets. To our knowledge, this is the first study to do this analysis.

We have already seen that the foreign net flow does not create a price pressure in emerging markets. Next sections will assess effects of foreign trading on volatility and Kurtosis of stocks and currencies, while section 4.2 will deal with the effects of foreigners on the currency value.

4.1) Effects on Stock's Volatility and Kurtosis

As seen before, one of the possible negative effects of foreign trading on a domestic equity emerging market is an increase of the volatility. If no restrictions to flows are imposed, the foreign capital may enter and exit the emerging market very fast and with high volume. To analyze the contemporaneous impact of foreign trading on the equity and exchange rate markets volatilities, the following pooled regressions are estimated:

$$SV_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i SV_{k,t-i} + \beta\ FT_{k,t} + \varepsilon_{k,t} \quad (4.1)$$

$$UV_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i UV_{k,t-i} + \phi\ FT_{k,t} + \varepsilon_{k,t} \quad (4.2)$$

$$XV_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i XV_{k,t-i} + \gamma\ FT_{k,t} + \varepsilon_{k,t} \quad (4.3)$$

Where $FT_{k,t}$ is the Turnover[6] of Equity Foreign Portfolio Investors of country k at time t as a percentage of the total turnover; $SV_{k,t}$ is the annualized volatility of the daily equity returns in local currency of country k at month t ; $UV_{k,t}$ is the annualized volatility of the daily equity returns in USD of country k at month t; $XV_{k,t}$ is the annualized volatility of the daily exchange rate's returns of country k at month t, and the c_i's are constants.

Results are on Table 8, and use specifications with 2 lags for volatility, since further lags were not significant. The control variables used on last section were also not relevant. As for 5 European countries data from flow are available only on a net basis, they are not present on this analysis, we use only 9 markets: Brazil, Indonesia, India, South Korea, Philippines, Romania, Turkey, Taiwan and South Africa.

Table 8 shows a strong persistence of the volatility for the first and second lags for all three kinds of returns (Local Currency Equity Returns, USD Equity Returns and Foreign Exchange Returns), as expected and documented in the literature. In fact, models with moving averages are widely used on Risk Management applications to forecast volatility. The coefficient of Foreign Turnover is negative and statically significant for the equity returns' volatility both in Local currency and USD. The coefficients are negative, which means that a higher trading by foreigners is accompanied by a decrease in volatility. Therefore, the effect of foreigner's trading would be beneficial to the local equity market. This beneficial effect is restricted to the equity market, since the coefficient of the volatility of Foreign Exchange Returns is not significant, although it is negative.

[6] The total turnover of foreign equity investors is the sum of purchases and sales.

TABLE 8 –Volatility Effects of Foreign Trading Equations (4.1), (4.2) and (4.3)				
Dependent Variable	**Volatility**		**Foreign Turnover**	**Adj R^2**
	Lag: 1M	**Lag: 2M**		
Local Returns' Volatility	0.3246[a]	0.1493[a]	-0.0733[b]	42.5%
USD Returns' Volatility	0.3419[a]	0.1469[a]	-0.0632[c]	32.7%
FX Returns' Volatility	0.3611[a]	0.2256[a]	-0.0020	40.5%

Estimation Method: Seemingly Unrelated Regression, using Fixed Effects.
a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%

The volatility can be replaced by the kurtosis as a measure of risk on the set of regressions (4.1) to (4.3). The kurtosis can be viewed as a measure of extreme events of the distribution or how fat are the tails of the distribution. In the risk management literature, it is common to use risk measures that focus on the tail of the distribution such as the Value at Risk and the Expected Short-fall. Therefore, if the foreign trading is increasing the kurtosis, we can say it is a negative effect since it increases the perception of risk and limits the allocation of capital to these markets.

Therefore, we can measure the effects of foreign trading on Kurtosis by running the following polled regressions:

$$SK_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i SK_{k,t-i} + \beta\ FT_{k,t} + \varepsilon_{k,t} \tag{4.4}$$

$$UK_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i UK_{k,t-i} + \phi\ FT_{k,t} + \varepsilon_{k,t} \tag{4.5}$$

$$XK_{k,t} = c_k + \sum_{i=1}^{n} \alpha_i XK_{k,t-i} + \gamma\ FT_{k,t} + \varepsilon_{k,t} \tag{4.6}$$

Where $FT_{k,t}$ is the Turnover of Equity Foreign Portfolio Investors of country k at time t as a percentage of the total turnover; $SK_{k,t}$ is the excess kurtosis of the daily equity returns in local currency of country k at month t ; $UK_{k,t}$ is the excess kurtosis of the daily equity returns in USD of country k at month t ; $XK_{k,t}$ is the excess kurtosis of the daily exchange rate's returns of country k at month t, and the c_i's are constants.

As in the volatility case, we use specifications with 2 lags and no control variables, for the same 9 markets. Results are presented on Table 9 support the view of no impact of

Foreign Turnover on Kurtosis - the Foreign Turnover has a negative coefficient, but it is not significant. For the equity returns we find no evidence of Kurtosis' persistence, while for the foreign exchange returns the evidence of Kurtosis persistence is restricted to the second lag. Therefore, we can reject negative impacts of Foreign Turnover on the tails of the returns' distributions analyzed on this section.

TABLE 9 – Effects of Foreign Trading on Kurtosis
Equations (4.4), (4.5) and (4.6)

Dependent Variable	Kurtosis		Foreign Turnover	Adj R2
	Lag: 1M	Lag: 2M		
Local Returns	-0.0161	0.0092	-0.8023	1.8%
USD Returns	0.0169	-0.0050	-0.1332	0.5%
FX Returns	0.0505	0.1068[a]	-0.0093	4.6%

Estimation Method: Seemingly Unrelated Regression, using Fixed Effects.
a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%

4.2) Effects on Foreign Exchange Returns

The flow of foreign investors to emerging equity markets may influence also the local currency spot value, especially when these investors are unhedged. The intuition is that the higher the inflow, the higher will be the value of the local currency. This section will analyze this effect through a regression of the foreign exchange returns as a dependent variable and foreign flow as a percentage of market capitalization[7] as an independent variable. As control variable we use the variation of the Spread over Treasury of JPM's EMBI+. This spread is the number of basis points that the USD Sovereign bonds' term structure of the issuer is above the US Treasury curve, and is seen as a measure of the country risk. It is expected that this spread and the currency value will move in the same direction. As we are using returns and flows (and not prices and stock) as variables, we have to use the first difference of the EMBI Spread as control variable. As not all the countries in our sample are present in the EMBI for this period, we use the country-specific EMBI when available, and the composite or regional EMBI otherwise.

[7] The ideal case is to normalize the flow by the turnover of the foreign exchange market, but we could not find this data.

Other control variables from the balance of payments (e.g. debt portfolio investment, direct investment, balance of goods) could be also used, however we did not find monthly data for most of the countries. Therefore, the specification includes only the EMBI as control variable:

$$FX_{k,t} = c_k + \sum_{i=1}^{2} \alpha_i FX_{k,t-i} + \beta\ FF_{k,t} + \rho\ EMBI_{k,t} + \varepsilon_{k,t} \qquad (4.7)$$

Where $FF_{k,t}$ is the Net Foreign Equity Portfolio Investment as a percentage of market capitalization of country *k* at time *t*; EMBI is the first difference of the spread of the EMBI from JP Morgan expressed in percentage points, FX is the return of the exchange rate denominated in local currency per US Dollar, and the *c*'s are constants.

Results are on Table 10, and include all markets of the sample except Estonia and Lithuania. The FX return is persistent for the first lag. The EMBI influence is significant, and in the expected direction: when local currencies loose value the EMBI increases and vice-versa. The flow coefficient is negative and significant at 5%, which means that foreign flows appreciate the local currency, as expected. Here we have to mention the problem of omitted variables bias, since control variables from the balance of payments may affect the foreign exchange. However, we believe that the EMBI is a reasonable proxy for some of these variables, especially the debt portfolio flows. Therefore, we may conclude that foreign equity flows has some influence on foreign exchange returns in emerging markets, in the way these flows tend to add value to the local currency.

TABLE 10 – Effects of Foreign Trading on Exchange Rate Returns
Pooled Regression (4.7)

	FX Returns		Flow	EMBI	Adj R^2
	Lag: 1M	Lag: 2M			
FX Returns	0.0732[b]	0.0392	-0.3129[b]	0.0096[a]	7.1%

Estimation Method: Seemingly Unrelated Regression, Fixed Effects.
a) Coefficient significant at 1%
b) Coefficient significant at 5%
c) Coefficient significant at 10%

4.3) Conclusion

This section analyzed the effects of foreign trading on local emerging markets. We found no evidence that this trading is prejudicial to the emerging equity and foreign exchange markets in our sample. In some cases, it even brings benefits. The idea that foreign traders increase volatility of emerging markets is refuted. On the contrary, our results suggest that periods of high trading by foreigners have lower volatility on equity markets. This is consistent with the hypothesis that foreign investors enter and exit the emerging markets gradually, building and unwinding their positions through a relatively long period of time. The persistence of foreign flows found on last sections corroborates this view. This is consistent with the findings of Albuquerque et al (2004), which uses flows of US investors to G7 countries. The articles of Froot and Donohue (2002,2004) and Froot et al (2001) also support the view of strong persistence. Besides that, the other risk factor analyzed, the Kurtosis of equity returns, is not influenced by the foreign flows.

The foreigners' flow tends to increase the value of local currencies. However, the volatility and kurtosis of foreign exchange returns are not affected, which corroborates the view of slow movements of foreigners when trading on emerging markets. Thus, although there is an influence on the local exchange market, this influence does not affect risk indicators like volatility and kurtosis, being smooth enough to avoid problems.

Therefore, results support the view that restrictions to equity capital flows are not necessary. This is in line with the results of Choe, Khoe and Stulz (1998), which find no evidence that foreign equity investors had a destabilizing effect on Korean stock market over the Asian crisis in 1997. However, Richards (2004) supports the view that foreign trading can be destabilizing in emerging markets and that policy makers should ensure that their markets and institutions are sufficiently strong to cope with these inflows and outflows. His conclusions are based on two results: first, there is a price pressure on equity markets caused by foreigners' trading; second, the foreign flows are substantially influenced by recent returns in global equity markets. The first result is not found in our sample (see section 3.5), while the second is not, in our view, a big threat to the stability of emerging markets, since developed markets tend to be more stable than emerging markets.

5) Final Remarks and Policy Implications

This study of the behavior of foreign investors in emerging markets could find little evidence that these investors have brought problems to local markets. Confirming the previous literature, we identify a strong persistence on the foreign flows. Foreign investors seem to build and unwind their positions on emerging stock markets slowly enough to avoid problems as equity price pressure or volatility and kurtosis upswings. . On the foreign exchange market an effect on the local currency value was found, but it does not affect the risk indicators of the market.

Regarding feedback trading, we evaluate the behavior of foreigners using USD returns (assuming unhedged investors) and local currency returns((assuming hedged investors)). As in previous studies (Richards (2004), Griffin, Nardari and Stulz(2004)) we found positive trading by hedged investors. However, we argue that is unlikely that foreginers invest using currency hedge, given the operational difficulties to hedge equity future payoffs, which are quite uncertain. The second hypothesis is that foreginers engage in negative feedback trading with no currency hedge. This second hypothesis seems more plausible and has stronger statistical evidence.

Given this picture of the foreign equity investors, it seems there is no reason to impose long-term restrictions to their flows since they bring benefits such as greater risk sharing and higher market liquidity. For example, regulations like limiting the percentage of foreign ownership of companies, ceiling the foreign equity investment amount or even closing completely the market for foreigners are not recommended.

Some kind of policy that do not restrict capital flows, but attenuate its possible shortcomings may be adopted. The International Monetary Fund (IMF 2003a and 2003b) suggests what they call “self-insurance” policies. These are general policies to enhance the investment environment for foreigners. For example, better sovereign external asset and liability management practices together with exchange rate policies adequated to the degree of capital account openness. This would bring more stability to the equity flows since the exchange rate tends to be easily foreseen. Policies to enhance financial system strength as well as to develop local securities and derivatives markets may smooth the foreign flow in turbulent periods.

References

Adabag, M. C. and Ornelas, J. R. (2005). "Behavior and Effects of Foreign Investors on Istanbul Stock Exchange", proceedings of the 4th Annual Conference of the European Economics and Finance Society.

Albuquerque R., Bauer G. H. and Schneider, M. (2004). "International Equity Flows and Returns: A Quantitative Equilibrium Approach", Bank of Canada, Working Papers Series, number 04-42.

Batra, A. (2003). "The Dynamics of Foreign Portfolio Inflows and Equity Returns in India", Indian Council For Research On International Economic Relations, Working Paper No. 109.

Bekaert, G. and Harvey, C. R. (2000) Foreign Speculators and Emerging Equity Markets Journal of Finance 55, pp. 565-613.

Bekaert, G. and Harvey, C.R. (1998). "Capital Flows and the Behavior of Emerging Equity Market Returns", NBER Working Paper No. 6669.

Bohn, H., and Tesar, L. L. (1996). "US equity investment in foreign markets: Portfolio rebalancing or return chasing?", American Economic Review 86, pp. 77–81.

Bowe, M. and Domuta, D. (2004). "Investor herding during financial crisis: A clinical study of the Jakarta Stock Exchange", Pacific-Basin Finance Journal 12, pp. 387– 418.

Brennan, M.J., and Cao, H.H. (1997). "International portfolio investment flows", Journal of Finance 52, pp. 1851–1880.

Chen, Y. (2002). "Domestic Investors' Herding Behavior in Reaction to Foreign Trading", 2002 National Taiwan University International Conference in Finance.

Choe, H., Kho, B., Stulz, R.M. (1999). "Do foreign investors destabilize stock markets? The Korean experience in 1997", Journal of Financial Economics 54, 227-264.

Clark, J. and Berko, E. (1996). "Foreign Investment Fluctuations and Emerging Market Stock Returns: The Case of Mexico", Research Paper from Federal Reserve Bank of New York, November 1996, Number 9635.

Dahlquist, M. and Robertsson, G. (2004). "A note on foreigners' trading and price effects across firms", Journal of Banking & Finance 28, p. 615-632.

Froot, K. A. and Donohue, J. T. (2002). "The persistence of emerging market equity flows", Emerging Markets Review 3, pp. 338–364.

Froot, K. A. and Donohue, J. T. (2004). "Decomposing the persistence of international equity flows", Finance Research Letters 1, pp. 154–170.

Froot, K.A., O'Connell, P.G.J. and Seasholes, M. (2001). "The portfolio flows of international investors", Journal of Financial Economics 59, 151–193.

Froot, K. A. and Ramadorai, T. (2001). "The information content of international portfolio flows", NBER Working Paper No. 8472.

Griffin, J. M., Nadari, F. and Stulz, R. M. (2004). "Are daily cross-border equity flows pushed or pulled?", The Review of Economics and Statistics 86, Issue 3, pp. 641-657.

Henry, P. B. (2000a). "Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices", Journal of Finance 55, p. 529-564.

Henry, P. B. (2000b). "Do Stock Market Liberalizations Cause Investment Booms?" Journal of Financial Economics, Vol. 58, No. 1.

International Monetary Fund (2003a) Global Financial Stability Report, World Economic and Financial Surveys (Washington, March 2003).

International Monetary Fund (2003b) Global Financial Stability Report, World Economic and Financial Surveys (Washington, September 2003).

Kim, E.H. and Singal V. (2000). "Stock Market Openings: Experience of Emerging Economies", Journal of Business 73, p. 25-66.

Odean, T. and Gervais (2001). "Learning to be Overconfident", The Review of Financial Studies 15, No 1, pp. 1-27.

Portes, R. and Rey, H. (2000). "The Determinants of Cross-Border Equity Flows: The Geography of Information", Center for International and Development Economics Research, UC Berkeley Working Paper Series 1011

Richards, A. (2004). "Big Fish in Small Ponds: The Momentum Investing and Price Impact of Foreign Investors in Asian Emerging Equity Markets", Journal of Financial and Quantitative Analysis 40, No. 1.

Tabak, B. M. (2003). "The Random Walk Hypothesis and the Behavior of Foreign Capital Portfolio Flows: the Brazilian Stock Market Case", Applied Financial Economics 13.

Warther, V. A. (1995). "Aggregate mutual fund flows and security returns", Journal of Financial Economics 39, pp. 209-235.

Banco Central do Brasil

Trabalhos para Discussão

Os Trabalhos para Discussão podem ser acessados na internet, no formato PDF, no endereço: http://www.bc.gov.br

Working Paper Series

Working Papers in PDF format can be downloaded from: http://www.bc.gov.br

1	**Implementing Inflation Targeting in Brazil** *Joel Bogdanski, Alexandre Antonio Tombini and Sérgio Ribeiro da Costa Werlang*	Jul/2000
2	**Política Monetária e Supervisão do Sistema Financeiro Nacional no Banco Central do Brasil** *Eduardo Lundberg*	Jul/2000
	Monetary Policy and Banking Supervision Functions on the Central Bank *Eduardo Lundberg*	Jul/2000
3	**Private Sector Participation: a Theoretical Justification of the Brazilian Position** *Sérgio Ribeiro da Costa Werlang*	Jul/2000
4	**An Information Theory Approach to the Aggregation of Log-Linear Models** *Pedro H. Albuquerque*	Jul/2000
5	**The Pass-Through from Depreciation to Inflation: a Panel Study** *Ilan Goldfajn and Sérgio Ribeiro da Costa Werlang*	Jul/2000
6	**Optimal Interest Rate Rules in Inflation Targeting Frameworks** *José Alvaro Rodrigues Neto, Fabio Araújo and Marta Baltar J. Moreira*	Jul/2000
7	**Leading Indicators of Inflation for Brazil** *Marcelle Chauvet*	Sep/2000
8	**The Correlation Matrix of the Brazilian Central Bank's Standard Model for Interest Rate Market Risk** *José Alvaro Rodrigues Neto*	Sep/2000
9	**Estimating Exchange Market Pressure and Intervention Activity** *Emanuel-Werner Kohlscheen*	Nov/2000
10	**Análise do Financiamento Externo a uma Pequena Economia Aplicação da Teoria do Prêmio Monetário ao Caso Brasileiro: 1991–1998** *Carlos Hamilton Vasconcelos Araújo e Renato Galvão Flôres Júnior*	Mar/2001
11	**A Note on the Efficient Estimation of Inflation in Brazil** *Michael F. Bryan and Stephen G. Cecchetti*	Mar/2001
12	**A Test of Competition in Brazilian Banking** *Márcio I. Nakane*	Mar/2001

13	**Modelos de Previsão de Insolvência Bancária no Brasil** *Marcio Magalhães Janot*	Mar/2001
14	**Evaluating Core Inflation Measures for Brazil** *Francisco Marcos Rodrigues Figueiredo*	Mar/2001
15	**Is It Worth Tracking Dollar/Real Implied Volatility?** *Sandro Canesso de Andrade and Benjamin Miranda Tabak*	Mar/2001
16	**Avaliação das Projeções do Modelo Estrutural do Banco Central do Brasil para a Taxa de Variação do IPCA** *Sergio Afonso Lago Alves*	Mar/2001
	Evaluation of the Central Bank of Brazil Structural Model's Inflation Forecasts in an Inflation Targeting Framework *Sergio Afonso Lago Alves*	Jul/2001
17	**Estimando o Produto Potencial Brasileiro: uma Abordagem de Função de Produção** *Tito Nícias Teixeira da Silva Filho*	Abr/2001
	Estimating Brazilian Potential Output: a Production Function Approach *Tito Nícias Teixeira da Silva Filho*	Aug/2002
18	**A Simple Model for Inflation Targeting in Brazil** *Paulo Springer de Freitas and Marcelo Kfoury Muinhos*	Apr/2001
19	**Uncovered Interest Parity with Fundamentals: a Brazilian Exchange Rate Forecast Model** *Marcelo Kfoury Muinhos, Paulo Springer de Freitas and Fabio Araújo*	May/2001
20	**Credit Channel without the LM Curve** *Victorio Y. T. Chu and Márcio I. Nakane*	May/2001
21	**Os Impactos Econômicos da CPMF: Teoria e Evidência** *Pedro H. Albuquerque*	Jun/2001
22	**Decentralized Portfolio Management** *Paulo Coutinho and Benjamin Miranda Tabak*	Jun/2001
23	**Os Efeitos da CPMF sobre a Intermediação Financeira** *Sérgio Mikio Koyama e Márcio I. Nakane*	Jul/2001
24	**Inflation Targeting in Brazil: Shocks, Backward-Looking Prices, and IMF Conditionality** *Joel Bogdanski, Paulo Springer de Freitas, Ilan Goldfajn and Alexandre Antonio Tombini*	Aug/2001
25	**Inflation Targeting in Brazil: Reviewing Two Years of Monetary Policy 1999/00** *Pedro Fachada*	Aug/2001
26	**Inflation Targeting in an Open Financially Integrated Emerging Economy: the Case of Brazil** *Marcelo Kfoury Muinhos*	Aug/2001
27	**Complementaridade e Fungibilidade dos Fluxos de Capitais Internacionais** *Carlos Hamilton Vasconcelos Araújo e Renato Galvão Flôres Júnior*	Set/2001

28	**Regras Monetárias e Dinâmica Macroeconômica no Brasil: uma Abordagem de Expectativas Racionais** *Marco Antonio Bonomo e Ricardo D. Brito*	Nov/2001
29	**Using a Money Demand Model to Evaluate Monetary Policies in Brazil** *Pedro H. Albuquerque and Solange Gouvêa*	Nov/2001
30	**Testing the Expectations Hypothesis in the Brazilian Term Structure of Interest Rates** *Benjamin Miranda Tabak and Sandro Canesso de Andrade*	Nov/2001
31	**Algumas Considerações sobre a Sazonalidade no IPCA** *Francisco Marcos R. Figueiredo e Roberta Blass Staub*	Nov/2001
32	**Crises Cambiais e Ataques Especulativos no Brasil** *Mauro Costa Miranda*	Nov/2001
33	**Monetary Policy and Inflation in Brazil (1975-2000): a VAR Estimation** *André Minella*	Nov/2001
34	**Constrained Discretion and Collective Action Problems: Reflections on the Resolution of International Financial Crises** *Arminio Fraga and Daniel Luiz Gleizer*	Nov/2001
35	**Uma Definição Operacional de Estabilidade de Preços** *Tito Nícias Teixeira da Silva Filho*	Dez/2001
36	**Can Emerging Markets Float? Should They Inflation Target?** *Barry Eichengreen*	Feb/2002
37	**Monetary Policy in Brazil: Remarks on the Inflation Targeting Regime, Public Debt Management and Open Market Operations** *Luiz Fernando Figueiredo, Pedro Fachada and Sérgio Goldenstein*	Mar/2002
38	**Volatilidade Implícita e Antecipação de Eventos de *Stress*: um Teste para o Mercado Brasileiro** *Frederico Pechir Gomes*	Mar/2002
39	**Opções sobre Dólar Comercial e Expectativas a Respeito do Comportamento da Taxa de Câmbio** *Paulo Castor de Castro*	Mar/2002
40	**Speculative Attacks on Debts, Dollarization and Optimum Currency Areas** *Aloisio Araujo and Márcia Leon*	Apr/2002
41	**Mudanças de Regime no Câmbio Brasileiro** *Carlos Hamilton V. Araújo e Getúlio B. da Silveira Filho*	Jun/2002
42	**Modelo Estrutural com Setor Externo: Endogenização do Prêmio de Risco e do Câmbio** *Marcelo Kfoury Muinhos, Sérgio Afonso Lago Alves e Gil Riella*	Jun/2002
43	**The Effects of the Brazilian ADRs Program on Domestic Market Efficiency** *Benjamin Miranda Tabak and Eduardo José Araújo Lima*	Jun/2002

44	**Estrutura Competitiva, Produtividade Industrial e Liberação Comercial no Brasil** *Pedro Cavalcanti Ferreira e Osmani Teixeira de Carvalho Guillén*	Jun/2002
45	**Optimal Monetary Policy, Gains from Commitment, and Inflation Persistence** *André Minella*	Aug/2002
46	**The Determinants of Bank Interest Spread in Brazil** *Tarsila Segalla Afanasieff, Priscilla Maria Villa Lhacer and Márcio I. Nakane*	Aug/2002
47	**Indicadores Derivados de Agregados Monetários** *Fernando de Aquino Fonseca Neto e José Albuquerque Júnior*	Set/2002
48	**Should Government Smooth Exchange Rate Risk?** *Ilan Goldfajn and Marcos Antonio Silveira*	Sep/2002
49	**Desenvolvimento do Sistema Financeiro e Crescimento Econômico no Brasil: Evidências de Causalidade** *Orlando Carneiro de Matos*	Set/2002
50	**Macroeconomic Coordination and Inflation Targeting in a Two-Country Model** *Eui Jung Chang, Marcelo Kfoury Muinhos and Joanílio Rodolpho Teixeira*	Sep/2002
51	**Credit Channel with Sovereign Credit Risk: an Empirical Test** *Victorio Yi Tson Chu*	Sep/2002
52	**Generalized Hyperbolic Distributions and Brazilian Data** *José Fajardo and Aquiles Farias*	Sep/2002
53	**Inflation Targeting in Brazil: Lessons and Challenges** *André Minella, Paulo Springer de Freitas, Ilan Goldfajn and Marcelo Kfoury Muinhos*	Nov/2002
54	**Stock Returns and Volatility** *Benjamin Miranda Tabak and Solange Maria Guerra*	Nov/2002
55	**Componentes de Curto e Longo Prazo das Taxas de Juros no Brasil** *Carlos Hamilton Vasconcelos Araújo e Osmani Teixeira de Carvalho de Guillén*	Nov/2002
56	**Causality and Cointegration in Stock Markets: the Case of Latin America** *Benjamin Miranda Tabak and Eduardo José Araújo Lima*	Dec/2002
57	**As Leis de Falência: uma Abordagem Econômica** *Aloisio Araujo*	Dez/2002
58	**The Random Walk Hypothesis and the Behavior of Foreign Capital Portfolio Flows: the Brazilian Stock Market Case** *Benjamin Miranda Tabak*	Dec/2002
59	**Os Preços Administrados e a Inflação no Brasil** *Francisco Marcos R. Figueiredo e Thaís Porto Ferreira*	Dez/2002
60	**Delegated Portfolio Management** *Paulo Coutinho and Benjamin Miranda Tabak*	Dec/2002

61	**O Uso de Dados de Alta Freqüência na Estimação da Volatilidade e do Valor em Risco para o Ibovespa** *João Maurício de Souza Moreira e Eduardo Facó Lemgruber*	Dez/2002
62	**Taxa de Juros e Concentração Bancária no Brasil** *Eduardo Kiyoshi Tonooka e Sérgio Mikio Koyama*	Fev/2003
63	**Optimal Monetary Rules: the Case of Brazil** *Charles Lima de Almeida, Marco Aurélio Peres, Geraldo da Silva e Souza and Benjamin Miranda Tabak*	Feb/2003
64	**Medium-Size Macroeconomic Model for the Brazilian Economy** *Marcelo Kfoury Muinhos and Sergio Afonso Lago Alves*	Feb/2003
65	**On the Information Content of Oil Future Prices** *Benjamin Miranda Tabak*	Feb/2003
66	**A Taxa de Juros de Equilíbrio: uma Abordagem Múltipla** *Pedro Calhman de Miranda e Marcelo Kfoury Muinhos*	Fev/2003
67	**Avaliação de Métodos de Cálculo de Exigência de Capital para Risco de Mercado de Carteiras de Ações no Brasil** *Gustavo S. Araújo, João Maurício S. Moreira e Ricardo S. Maia Clemente*	Fev/2003
68	**Real Balances in the Utility Function: Evidence for Brazil** *Leonardo Soriano de Alencar and Márcio I. Nakane*	Feb/2003
69	**r-filters: a Hodrick-Prescott Filter Generalization** *Fabio Araújo, Marta Baltar Moreira Areosa and José Alvaro Rodrigues Neto*	Feb/2003
70	**Monetary Policy Surprises and the Brazilian Term Structure of Interest Rates** *Benjamin Miranda Tabak*	Feb/2003
71	**On Shadow-Prices of Banks in Real-Time Gross Settlement Systems** *Rodrigo Penaloza*	Apr/2003
72	**O Prêmio pela Maturidade na Estrutura a Termo das Taxas de Juros Brasileiras** *Ricardo Dias de Oliveira Brito, Angelo J. Mont'Alverne Duarte e Osmani Teixeira de C. Guillen*	Maio/2003
73	**Análise de Componentes Principais de Dados Funcionais – uma Aplicação às Estruturas a Termo de Taxas de Juros** *Getúlio Borges da Silveira e Octavio Bessada*	Maio/2003
74	**Aplicação do Modelo de Black, Derman & Toy à Precificação de Opções Sobre Títulos de Renda Fixa** *Octavio Manuel Bessada Lion, Carlos Alberto Nunes Cosenza e César das Neves*	Maio/2003
75	**Brazil's Financial System: Resilience to Shocks, no Currency Substitution, but Struggling to Promote Growth** *Ilan Goldfajn, Katherine Hennings and Helio Mori*	Jun/2003

76	**Inflation Targeting in Emerging Market Economies** *Arminio Fraga, Ilan Goldfajn and André Minella*	Jun/2003
77	**Inflation Targeting in Brazil: Constructing Credibility under Exchange Rate Volatility** *André Minella, Paulo Springer de Freitas, Ilan Goldfajn and Marcelo Kfoury Muinhos*	Jul/2003
78	**Contornando os Pressupostos de Black & Scholes: Aplicação do Modelo de Precificação de Opções de Duan no Mercado Brasileiro** *Gustavo Silva Araújo, Claudio Henrique da Silveira Barbedo, Antonio Carlos Figueiredo, Eduardo Facó Lemgruber*	Out/2003
79	**Inclusão do Decaimento Temporal na Metodologia Delta-Gama para o Cálculo do VaR de Carteiras Compradas em Opções no Brasil** *Claudio Henrique da Silveira Barbedo, Gustavo Silva Araújo, Eduardo Facó Lemgruber*	Out/2003
80	**Diferenças e Semelhanças entre Países da América Latina: uma Análise de *Markov Switching* para os Ciclos Econômicos de Brasil e Argentina** *Arnildo da Silva Correa*	Out/2003
81	**Bank Competition, Agency Costs and the Performance of the Monetary Policy** *Leonardo Soriano de Alencar and Márcio I. Nakane*	Jan/2004
82	**Carteiras de Opções: Avaliação de Metodologias de Exigência de Capital no Mercado Brasileiro** *Cláudio Henrique da Silveira Barbedo e Gustavo Silva Araújo*	Mar/2004
83	**Does Inflation Targeting Reduce Inflation? An Analysis for the OECD Industrial Countries** *Thomas Y. Wu*	May/2004
84	**Speculative Attacks on Debts and Optimum Currency Area: a Welfare Analysis** *Aloisio Araujo and Marcia Leon*	May/2004
85	**Risk Premia for Emerging Markets Bonds: Evidence from Brazilian Government Debt, 1996-2002** *André Soares Loureiro and Fernando de Holanda Barbosa*	May/2004
86	**Identificação do Fator Estocástico de Descontos e Algumas Implicações sobre Testes de Modelos de Consumo** *Fabio Araujo e João Victor Issler*	Maio/2004
87	**Mercado de Crédito: uma Análise Econométrica dos Volumes de Crédito Total e Habitacional no Brasil** *Ana Carla Abrão Costa*	Dez/2004
88	**Ciclos Internacionais de Negócios: uma Análise de Mudança de Regime Markoviano para Brasil, Argentina e Estados Unidos** *Arnildo da Silva Correa e Ronald Otto Hillbrecht*	Dez/2004
89	**O Mercado de *Hedge* Cambial no Brasil: Reação das Instituições Financeiras a Intervenções do Banco Central** *Fernando N. de Oliveira*	Dez/2004

90	**Bank Privatization and Productivity: Evidence for Brazil** *Márcio I. Nakane and Daniela B. Weintraub*	Dec/2004
91	**Credit Risk Measurement and the Regulation of Bank Capital and Provision Requirements in Brazil – a Corporate Analysis** *Ricardo Schechtman, Valéria Salomão Garcia, Sergio Mikio Koyama and Guilherme Cronemberger Parente*	Dec/2004
92	**Steady-State Analysis of an Open Economy General Equilibrium Model for Brazil** *Mirta Noemi Sataka Bugarin, Roberto de Goes Ellery Jr., Victor Gomes Silva, Marcelo Kfoury Muinhos*	Apr/2005
93	**Avaliação de Modelos de Cálculo de Exigência de Capital para Risco Cambial** *Claudio H. da S. Barbedo, Gustavo S. Araújo, João Maurício S. Moreira e Ricardo S. Maia Clemente*	Abr/2005
94	**Simulação Histórica Filtrada: Incorporação da Volatilidade ao Modelo Histórico de Cálculo de Risco para Ativos Não-Lineares** *Claudio Henrique da Silveira Barbedo, Gustavo Silva Araújo e Eduardo Facó Lemgruber*	Abr/2005
95	**Comment on Market Discipline and Monetary Policy by Carl Walsh** *Maurício S. Bugarin and Fábia A. de Carvalho*	Apr/2005
96	**O que É Estratégia: uma Abordagem Multiparadigmática para a Disciplina** *Anthero de Moraes Meirelles*	Ago/2005
97	**Finance and the Business Cycle: a Kalman Filter Approach with Markov Switching** *Ryan A. Compton and Jose Ricardo da Costa e Silva*	Aug/2005
98	**Capital Flows Cycle: Stylized Facts and Empirical Evidences for Emerging Market Economies** *Helio Mori e Marcelo Kfoury Muinhos*	Aug/2005
99	**Adequação das Medidas de Valor em Risco na Formulação da Exigência de Capital para Estratégias de Opções no Mercado Brasileiro** *Gustavo Silva Araújo, Claudio Henrique da Silveira Barbedo,e Eduardo Facó Lemgruber*	Set/2005
100	**Targets and Inflation Dynamics** *Sergio A. L. Alves and Waldyr D. Areosa*	Oct/2005
101	**Comparing Equilibrium Real Interest Rates: Different Approaches to Measure Brazilian Rates** *Marcelo Kfoury Muinhos and Márcio I. Nakane*	Mar/2006
102	**Judicial Risk and Credit Market Performance: Micro Evidence from Brazilian Payroll Loans** *Ana Carla A. Costa and João M. P. de Mello*	Apr/2006
103	**The Effect of Adverse Supply Shocks on Monetary Policy and Output** *Maria da Glória D. S. Araújo, Mirta Bugarin, Marcelo Kfoury Muinhos and Jose Ricardo C. Silva*	Apr/2006

104	**Extração de Informação de Opções Cambiais no Brasil** *Eui Jung Chang e Benjamin Miranda Tabak*	Abr/2006
105	**Representing Roommate's Preferences with Symmetric Utilities** *José Alvaro Rodrigues Neto*	Apr/2006
106	**Testing Nonlinearities Between Brazilian Exchange Rates and Inflation Volatilities** *Cristiane R. Albuquerque and Marcelo Portugal*	May/2006
107	**Demand for Bank Services and Market Power in Brazilian Banking** *Márcio I. Nakane, Leonardo S. Alencar and Fabio Kanczuk*	Jun/2006
108	**O Efeito da Consignação em Folha nas Taxas de Juros dos Empréstimos Pessoais** *Eduardo A. S. Rodrigues, Victorio Chu, Leonardo S. Alencar e Tony Takeda*	Jun/2006
109	**The Recent Brazilian Disinflation Process and Costs** *Alexandre A. Tombini and Sergio A. Lago Alves*	Jun/2006
110	**Fatores de Risco e o *Spread* Bancário no Brasil** *Fernando G. Bignotto e Eduardo Augusto de Souza Rodrigues*	Jul/2006
111	**Avaliação de Modelos de Exigência de Capital para Risco de Mercado do Cupom Cambial** *Alan Cosme Rodrigues da Silva, João Maurício de Souza Moreira e Myrian Beatriz Eiras das Neves*	Jul/2006
112	**Interdependence and Contagion: an Analysis of Information Transmission in Latin America's Stock Markets** *Angelo Marsiglia Fasolo*	Jul/2006
113	**Investigação da Memória de Longo Prazo da Taxa de Câmbio no Brasil** *Sergio Rubens Stancato de Souza, Benjamin Miranda Tabak e Daniel O. Cajueiro*	Ago/2006
114	**The Inequality Channel of Monetary Transmission** *Marta Areosa and Waldyr Areosa*	Aug/2006
115	**Myopic Loss Aversion and House-Money Effect Overseas: an Experimental Approach** *José L. B. Fernandes, Juan Ignacio Peña and Benjamin M. Tabak*	Sep/2006
116	**Out-Of-The-Money Monte Carlo Simulation Option Pricing: the Join Use of Importance Sampling and Descriptive Sampling** *Jaqueline Terra Moura Marins, Eduardo Saliby and Joséte Florencio dos Santos*	Sep/2006
117	**An Analysis of Off-Site Supervision of Banks' Profitability, Risk and Capital Adequacy: a Portfolio Simulation Approach Applied to Brazilian Banks** *Theodore M. Barnhill, Marcos R. Souto and Benjamin M. Tabak*	Sep/2006
118	**Contagion, Bankruptcy and Social Welfare Analysis in a Financial Economy with Risk Regulation Constraint** *Aloísio P. Araújo and José Valentim M. Vicente*	Oct/2006

119	**A Central de Risco de Crédito no Brasil: uma Análise de Utilidade de Informação** *Ricardo Schechtman*	Out/2006
120	**Forecasting Interest Rates: an Application for Brazil** *Eduardo J. A. Lima, Felipe Luduvice and Benjamin M. Tabak*	Oct/2006
121	**The Role of Consumer's Risk Aversion on Price Rigidity** *Sergio A. Lago Alves and Mirta N. S. Bugarin*	Nov/2006
122	**Nonlinear Mechanisms of the Exchange Rate Pass-Through: a Phillips Curve Model With Threshold for Brazil** *Arnildo da Silva Correa and André Minella*	Nov/2006
123	**A Neoclassical Analysis of the Brazilian "Lost-Decades"** *Flávia Mourão Graminho*	Nov/2006
124	**The Dynamic Relations between Stock Prices and Exchange Rates: Evidence for Brazil** *Benjamin M. Tabak*	Nov/2006
125	**Herding Behavior by Equity Foreign Investors on Emerging Markets** *Barbara Alemanni and José Renato Haas Ornelas*	Dec/2006
126	**Risk Premium: Insights over the Threshold** *José L. B. Fernandes, Augusto Hasman and Juan Ignacio Peña*	Dec/2006
127	**Uma Investigação Baseada em Reamostragem sobre Requerimentos de Capital para Risco de Crédito no Brasil** *Ricardo Schechtman*	Dec/2006
128	**Term Structure Movements Implicit in Option Prices** *Caio Ibsen R. Almeida and José Valentim M. Vicente*	Dec/2006
129	**Brazil: Taming Inflation Expectations** *Afonso S. Bevilaqua, Mário Mesquita and André Minella*	Jan/2007
130	**The Role of Banks in the Brazilian Interbank Market: Does Bank Type Matter?** *Daniel O. Cajueiro and Benjamin M. Tabak*	Jan/2007
131	**Long-Range Dependence in Exchange Rates: the Case of the European Monetary System** *Sergio Rubens Stancato de Souza, Benjamin M. Tabak and Daniel O. Cajueiro*	Mar/2007
132	**Credit Risk Monte Carlo Simulation Using Simplified Creditmetrics' Model: the Joint Use of Importance Sampling and Descriptive Sampling** *Jaqueline Terra Moura Marins and Eduardo Saliby*	Mar/2007
133	**A New Proposal for Collection and Generation of Information on Financial Institutions' Risk: the Case of Derivatives** *Gilneu F. A. Vivan and Benjamin M. Tabak*	Mar/2007
134	**Amostragem Descritiva no Apreçamento de Opções Européias através de Simulação Monte Carlo: o Efeito da Dimensionalidade e da Probabilidade de Exercício no Ganho de Precisão** *Eduardo Saliby, Sergio Luiz Medeiros Proença de Gouvêa e Jaqueline Terra Moura Marins*	Abr/2007

135	**Evaluation of Default Risk for the Brazilian Banking Sector** *Marcelo Y. Takami and Benjamin M. Tabak*	May/2007
136	**Identifying Volatility Risk Premium from Fixed Income Asian Options** *Caio Ibsen R. Almeida and José Valentim M. Vicente*	May/2007
137	**Monetary Policy Design under Competing Models of Inflation Persistence** *Solange Gouvea e Abhijit Sen Gupta*	May/2007
138	**Forecasting Exchange Rate Density Using Parametric Models: the Case of Brazil** *Marcos M. Abe, Eui J. Chang and Benjamin M. Tabak*	May/2007
139	**Selection of Optimal Lag Length inCointegrated VAR Models with Weak Form of Common Cyclical Features** *Carlos Enrique Carrasco Gutiérrez, Reinaldo Castro Souza and Osmani Teixeira de Carvalho Guillén*	Jun/2007
140	**Inflation Targeting, Credibility and Confidence Crises** *Rafael Santos and Aloísio Araújo*	Aug/2007
141	**Forecasting Bonds Yields in the Brazilian Fixed income Market** *Jose Vicente and Benjamin M. Tabak*	Aug/2007
142	**Crises Análise da Coerência de Medidas de Risco no Mercado Brasileiro de Ações e Desenvolvimento de uma Metodologia Híbrida para o *Expected Shortfall*** *Alan Cosme Rodrigues da Silva, Eduardo Facó Lemgruber, José Alberto Rebello Baranowski e Renato da Silva Carvalho*	Ago/2007
143	**Price Rigidity in Brazil: Evidence from CPI Micro Data** *Solange Gouvea*	Sep/2007
144	**The Effect of Bid-Ask Prices on Brazilian Options Implied Volatility: a Case Study of Telemar Call Options** *Claudio Henrique da Silveira Barbedo and Eduardo Facó Lemgruber*	Oct/2007
145	**The Stability-Concentration Relationship in the Brazilian Banking System** *Benjamin Miranda Tabak, Solange Maria Guerra, Eduardo José Araújo Lima and Eui Jung Chang*	Oct/2007
146	**Movimentos da Estrutura a Termo e Critérios de Minimização do Erro de Previsão em um Modelo Paramétrico Exponencial** *Caio Almeida, Romeu Gomes, André Leite e José Vicente*	Out/2007
147	**Explaining Bank Failures in Brazil: Micro, Macro and Contagion Effects (1994-1998)** *Adriana Soares Sales and Maria Eduarda Tannuri-Pianto*	Oct/2007
148	**Um Modelo de Fatores Latentes com Variáveis Macroeconômicas para a Curva de Cupom Cambial** *Felipe Pinheiro, Caio Almeida e José Vicente*	Out/2007
149	**Joint Validation of Credit Rating PDs under Default Correlation** *Ricardo Schechtman*	Oct/2007

150	**A Probabilistic Approach for Assessing the Significance of Contextual Variables in Nonparametric Frontier Models: an Application for Brazilian Banks** *Roberta Blass Staub and Geraldo da Silva e Souza*	Oct/2007
151	**Building Confidence Intervals with Block Bootstraps for the Variance Ratio Test of Predictability** *Eduardo José Araújo Lima and Benjamin Miranda Tabak*	Nov/2007
152	**Demand for Foreign Exchange Derivatives in Brazil: Hedge or Speculation?** *Fernando N. de Oliveira and Walter Novaes*	Dec/2007
153	**Aplicação da Amostragem por Importância à Simulação de Opções Asiáticas Fora do Dinheiro** *Jaqueline Terra Moura Marins*	Dez/2007
154	**Identification of Monetary Policy Shocks in the Brazilian Market for Bank Reserves** *Adriana Soares Sales and Maria Tannuri-Pianto*	Dec/2007
155	**Does Curvature Enhance Forecasting?** *Caio Almeida, Romeu Gomes, André Leite and José Vicente*	Dec/2007
156	**Escolha do Banco e Demanda por Empréstimos: um Modelo de Decisão em Duas Etapas Aplicado para o Brasil** *Sérgio Mikio Koyama e Márcio I. Nakane*	Dez/2007
157	**Is the Investment-Uncertainty Link Really Elusive? The Harmful Effects of Inflation Uncertainty in Brazil** *Tito Nícias Teixeira da Silva Filho*	Jan/2008
158	**Characterizing the Brazilian Term Structure of Interest Rates** *Osmani T. Guillen and Benjamin M. Tabak*	Feb/2008